AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Cancelled).

4. (Original) An improved equalization system for DMT based modem receiver comprising:

a time domain equalizer for processing samples from an analog front end;

means for transferring samples of every DMT frame from said time domain equalizer to a Fast Fourier Transform (FFT) buffer;

means for computing differences of time domain samples for every frame into the FFT buffer and saving the results in the FFT buffer;

a first FFT for calculating the first FFT and saving the results in said FFT buffer so that at each DMT frame, after a difference and FFT operation, the FFT buffer contains the first FFT and v-1 time domain sample differences;

a sliding FFT that for each tone reads the first FFT result and v- 1 FFTs from FFT buffer and recursively computes the rest of v-1 FFTs for the particular tone; and

an equalizer responsive to the computed sliding FFT for computing equalizer outputs.

5. (Original) The system of claim 4 wherein said equalizer recursively computes the equalizer output and writes the final outputs to the FFT buffer.

6. (Original) The system of Claim 5 wherein said sliding FFT and equalizer repeats the computing FFT operation and per tone equalization for all tones that carry bits and only using each intermediate FFT result for conducting the particular stage equalizer operation and computing the sliding FFT for the next stage and only storing the final result.

7. (Original) The system of claim 4 wherein the sliding FFT comprises a complex multiplier and a complex accumulator and the equalizer block comprises a real to complex multiplier and a complex accumulator whereby for each tone, each block recursively calculates v times to achieve final equalizer output for each tone and repeats the same procedure for each tone.

8. (Original) A method of providing an improved equalization for DMT based modem receiver comprising the steps of:

processing samples from the analog front end by a time domain equalizer;

transferring samples of every DMT frame from the time domain equalizer to Fast Fourier Transform (FFT) buffer;

computing differences of time domain samples for every frame into the FFT buffer and saving the results in the FFT buffer;

calculating a first FFT required for computing a sliding FFT and saving the results in the FFT buffer so that at each DMT frame, after a difference and FFT operation, the FFT buffer contains the first FFT and v-1 time domain sample differences;

computing sliding FFT and per tone equalizer operation wherein for each tone, sliding FFT block reads the first FFT result and v-1 FFTs from FFT buffer and recursively computes the rest of the v-1 FFTs for the particular tone; and

providing new results after each iteration to an equalizer that computes equalizer output.

9. (Original) The method of claim 8 wherein said equalizer recursively computes the equalizer output and writes the final outputs to the FFT buffer.

10. (Original) The method of Claim 9 wherein said sliding FFT and equalizer repeats the computing FFT operation and per tone equalization for all tones that carry bits and only using each intermediate FFT result for conducting the particular stage equalizer operation and computing the sliding FFT for the next stage and only storing the final result.

11. (Original) The method of claim 8 wherein the sliding FFT comprises a complex multiplier and a complex accumulator and the equalizer block comprises a real to complex multiplier and a complex accumulator whereby for each tone, each block recursively calculates v times to achieve fmal equalizer output for each tone and repeats the same procedure for each tone.